31/Reply Brief
Docket No. 95-004M
PATENT APPLICATION

I certify that on the date specified below this correspondence is being mailed as first-class mail, postage prepaid, addressed to Board of Patent Appeals and Interferences, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450.

4/27/04 — Conrad O. Gardner

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Conrad O. Gardner	Group Art Unit:	3618
Application No.:	08/896,514	Examiner:	A. Lerner
Filing Date:	06/23/97	Docket No.:	95-004M
		Date:	

For: Extended Range Motor Vehicle Having Ambient Pollution Processing

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Responsive to the Examiner's Answer dated March 3, 2004, applicant files the following Reply Brief within 2 months of the Examiner's Answer.

I.

The Examiner's Answer rejects claims 34, 35, 37, and 50-54 over Ellers '025 under 35 USC 102. The Examiner further rejects claim 41 over Ellers '025 under 35 USC 103.

Claims 34, 35, 37, 40 and 54 are treated in the AFFIDAVIT OF PHILIP MALTE under Rule 132. The Examiner has never considered the Rule 132 evidence as required under M.P.E.P. 716.01. Even further, "Where the evidence is insufficient to overcome the rejection, the Examiner must specifically explain why the evidence is insufficient.

The Court of Appeals for the Federal Circuit stated in *Stratofex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538, 218 USPQ 871, 879 (Fed.Cir.1083) that "evidence arising out of so-called secondary considerations must always, when present, be considered en route to a determination of obviousness."

II.

Further references utilized by the Examiner:

Kenyon '342, in the rejection of claims 37, 40, 46, 47, 51, and 61 under 35 USC 102, and Kenyon in view of Ellers '025 as to claim 48.

Lynch et al. '795, in the rejections of claims 37, 40, 50, 51, 54, 55, 56, and 57-60 under 35 USC 102.

Kenyon

Kenyon is simply a hybrid heat engine, electrical motor power plant (see claim 1 and the specification as to how this combination can be supplemented.

Lynch

Lynch recognizes that even with a plurality of 12-volt (lead acid) batteries and a "load leveler", a mission can leave the batteries "fully discharged at the end". The system then requires a battery charging period, as plugging into the home overnight like all pure electrics.

Kenyon

A hybrid heat engine, electrical motor power plant using a standard battery (lead acid) including a "switcher circuit."

The three references do not include fast charge-discharge batteries or cruise control circuits and therefore do not provide the features specified in various of applicant's claims flowing from applicant's system, e.g.:

Claim 34 specifies a cruise mode control circuit, also claim 46 and 49. Claim 50 defines a cruise mode nowhere shown or suggested by the above three references. See also claims 53 and 54 in this regard. Claim 55 describes features of the present system including "rapidly capturing power from a continuously running low horsepower internal combustion engine to charge a fast charge-discharge battery without loss of said power. This cannot be done with the 3 prior art patents. Replacing the present hybrids using fast charge batteries with a lead acid battery would be disastrous, and, even if it could be done would take present systems back to the prior art hybrid electrics of limited range. See also claim 56 where a nickel cadmium fast charge-discharge battery is used as an example. Other fast charge-discharge batteries could be utilized, e.g., nickel metal hydride batteries.

Claim 57 clearly defines the cruise mode conditions and function not seen or suggested by the above three references.

Claim 58 is not seen in the references (see page 4, line 16 on of applicant's specification) where the results of the present system require only a 20-30 percent horsepower engine compared to the motor vehicle without the present system.

Claim 59 clearly defines a combination different from the prior lead acid battery electrics or improvements utilizing said batteries as shown in the above three references.
A plurality of vehicle operating parameters define deployment of the electric motor and internal combustion engine neither seen or suggested for cruise mode operation as in claim 60.

Claims 46-49, 57, 58, 60, and 61 were rejected in the Examiner's Answer under 35 USC § 112.

Claim 46 is clearly definite.

In Figures 1, 3, and 4 it can easily be seen that an exemplary 4 wheel drive embodiment shows engine power applied to a first set of traction wheels (26) and electric motor power applied to a second set of traction wheels (18). Claim 46 is concerned with a logic circuit control function whether as written, the claim concerns either 4 wheel drive or a single pair of tractor wheels (scope) and is not ambiguous.

Claim 49 is clearly definite

Claim 49 is dependent from Claim 46. Claim 46 provides antecedent basis for the logic control circuit of claim 49 further limiting the control circuit of claim 46 with the added feature of controlling the periods of torque transfer in the antecedent torque flow paths of claim 46.

Claim 55 is clearly definite. Method claim 55 relates to a combination of important features of the present system. While a definition of a system occurrence in the cruise mode occurs in claims (b), the clause being a method step, it was not felt necessary to simply modify or repeat in the preamble the inclusion of the hybrid vehicle as having a cruise mode.

Claim 57 is clearly definite

It is believed that line 2 introduces the term cruise mode initially as the antecedent itself for later antecedent support in the same and later lines of the claim.

Claim 58 is believed clear and definite

The limitation "utilizing an internal combustion engine having a horsepower approximately 20 to 30 percent of the horsepower of an equivalent weight internal combustion only powered vehicle" provides scope which does not change regardless of engine horsepower of the combustion engine only powered engines. The claimed hybrid motor of claim 58 defines utilizing an internal combustion engine having a horsepower approximately 20 to 30 percent. So as technology advances and internal combustion only powered vehicles become more efficient and more powerful, as the Examiner states, the hybrid scope remains the same percentage of whatever the horsepower is provided in these newer internal combustion engine only powered vehicles.

Claim 60 is definite within the meaning of 35 USC 112.

It is not seen how or where antecedent basis could be provided in the first phrase of the method claim utilizing the term which provides antecedent basis later in line 3 of the claim.

Claim 61 is believed definite within the meaning of 35 USC 112

While the Examiner (1) rejected previously allowed claim 61 (under issue C at page 13 of the Examiner's Answer) on prior art, the question (2) of indefiniteness in allowing the claim was not challenged by the previous Examiner in allowing the claim.

In response to page 5 of the Examiner's Answer, the engine as recited has an output shift (line 4) and the electric motor has an output shift (line 8). The "drive wheels" are then specified which can be two wheel or four wheel drive. It is not believed that the limitation is vague or indefinite in specifying neither specifically.

Prior art of record (paragraph 9 of the Examiner's Answer

4,165,795 (Lynch et al.)
4,438,342 (Kenyon)
5,923,025 (Ellers)

Claim Rejections – 35 USC 102

Claims 34-37, 50, 54, and 57-61 are clearly not anticipated by Ellers ('025)

Ellers fails to disclose (1) a cruise mode control circuit having preprogrammed operating conditions, simply showing a single operating condition determined by a speed sensor which causes cranking of an internal combustion engine in response to a single fixed speed parameter. Claim 34 further specifies in the system claim a combustion engine running in an optimum mode at substantially constant speed and power output level, not cranked on by a sensor at a time only when speed is constant. Further, while constant speed is mentioned, substantially constant speed and power level is not.

Dependent claim 35 further specifies charging a battery during cruise mode off condition (parent claim 34 specifying cruise mode as responsive to a plurality of operating conditions) dependent upon a predetermined vehicle speed.

Dependent claim 36 further specifies coupling the combustion engine to wheels in the event of an electric power failure condition.

Claim 37

Claim 37 specifies a power generator driven by the engine to supply electric power to the battery. Ellers' system fails to show a motor and a power generator. Ellers fails to show control means for controlling whether to transfer a driving force generated by an engine to a power generator or wheels in accordance with a vehicle running state dependent upon a predetermined value.

Claim 50

Claim 50 is clearly not anticipated by Ellers. Ellers has a fixed speed change from electric to combustion engine propulsion. The cruise mode specifically defined in claim 50 is not seen in Ellers.

Claim 54

Ellers utilizes a speed sensor when switching from electric power to combustion engine power in contrast to a cruise mode logic control circuit responsive to a plurality of operating parameters as specified in claim 54. Further, a plurality of parameters are specified in claim 54.

Claim 57

A plurality of cruise mode conditions are specified in claim 57 in contrast to a speed sensor device shown in Ellers, claim 57 further specifying a cruise mode definition not simply a preselected speed transfer from electric power to combustion engine power.

Claim 58

A horsepower 20 to 30 percent of the horsepower that would be required if Ellers were combustion engine powered alone is not shown. Further, it is not seen where the combustion engine of Ellers is operating under relatively constant speed and load demands in the 55 mph range.

Claim 59

The Ellers 6 volt battery is subject to a 5.25 volt discharge limitation whereas claim 59 utilizes a fast charge-discharge battery to power the electric motor on throttle demand, while fast charging when the combustion engine continues to run.

Claim 60

A speed sensor switch is not utilized in claim 60. Rather, a plurality of vehicle operating parameters are utilized for electric and combustion engine control.

Claim 61

Claim 61 specifies "means for uncoupling said power transfer means for transferring an output power of said engine from the output shaft thereof to drive wheels of the hybrid vehicle upon starting the hybrid vehicle." Ellers, in contrast, the momentum of the vehicle, acting through the second set of wheels actuates the variable torque converter to "crank" the internal combustion engine to start it (see Abstract).

Claims 37, 40, 46, 47, 51, 55, and 61 are not anticipated by Kenyon ('342).

Claim 37

(1) In Kenyon, an alternator (with rectified output) is connected in parallel with a battery pack to the electrical drive motor (col. 4, lines 6-9), also (2) the battery and alternator can be series connected to the motor (col. 4, lines 18-20). (3) The motor can also be run solely from the alternator with the battery eliminated. A switch 80 decouples the engine and causes drive motor 54 alone to propel the vehicle. In contrast, it is not seen in Kenyon where a control means in the last subparagraph of claim 37 defines "transfer of the driving force generated by the engine to wheels when the running state is more than a predetermined value, transfers the driving force generated by the engine to the power generator when the running state is less than a predetermined value."

Claim 40

Claim 40 dependent from claim 37. While a speed sensing device switches to electrical power alone in Kenyon, the driving force of the engine in claim 40 further transferring to a power generator is not seen.

Claim 46

A logic control circuit which performs an arithmetic logic function is not seen in Kenyon. Kenyon shows a speed sensitive switch.

Claim 47

Dependent claim 47 includes the logic control circuit of claim 46 when utilized in a 4-wheel drive configuration.

Claim 51

For city driving, a speed sensing device (switch 80) in Kenyon decouples heat engine 10 to permit electrical drive motor 54 alone to propel the vehicle. Kenyon utilizes predetermined speed switching, while claim 55 in contrast specifies higher and lower speed regions of system operation for charging utilizing the engine.

Claim 55

Phrase (a) "rapidly capturing power from a continuously running low power internal combustion engine to charge a fast charge-discharge battery without loss of said power" is not seen in Kenyon. Further, phrase (b) providing instant powerful acceleration by operator depression of throttle pedal to produce electric propulsion while in the cruise mode when the speed of the vehicle is dropping is not seen.

Claim 61

In Kenyon, at column 1, lines 51-55, the electric drive motor does not include power transfer means as claim 61 since the electric drive motor coupling is fixed.

Claims 37, 40, 50, 51, 54, 55, and 57-60 are clearly not anticipated by Lynch ('795)

As mentioned in Part II of applicant's Reply Brief, Lynch is the antithesis of the presently disclosed system since lead acid batteries are used with a "load leveler" planned effort to

prevent full discharge at the end of a trip. Range is thus limited to a planned mission with overnight charge.

Claim 37

Claim 37 specifies control means for a power generator supplying electric power to a battery, the control means (30) being defined with specificity and not operative to provide load leveling for planned trips utilizing lead acid batteries. Further, claim 37 calls for a motor and a power generator, not a direct current motor-generator.

Claim 40

Claim 40 references control means for a power generator in terms of vehicle speed.

Claim 50

Claim 50 defines cruise mode operation not seen in Lynch.

Claim 51

Speed variations above and below no load speed control load leveling operations, i.e., the flow of power to and from the batteries in Lynch, not higher and lower vehicle speeds as claim 51.

Claim 54

A cruise mode logic control circuit responsive to a plurality of vehicle operating parameters is not seen in Lynch.

Claim 55

A load leveling system for lead acid batteries is seen in Lynch, nothing with respect to clause (a) of claim 55, "...rapidly capturing power from continuously running low horsepower internal combustion engine to charge a fast charge-discharge batter without loss of said power" is seen in Lynch.

Claim 57

The cruise mode definition of claim 57 is not seen in Lynch.

Claim 58

Nothing in Lynch suggests utilization of only a 20-to-30 percent horsepower engine over the horsepower engine normally expected to power the vehicle.

Claim 59

The use and operation of a fast charge-discharge battery of claim 59 is not seen in Lynch.

Claim 60

A cruise mode control function as defined in claim 60 is not seen in Lynch.

Claim Rejections – 35 U.S.C. 103

Claim 41 stands rejected under 35 U.S.C. 103 over Ellers.

Claim 41, dependent from claim 40, in turn depends from claim 37.

Ellers states that the "internal combustion engine does not come into play until the vehicle has reached a desirable cruising speed, such as 55 mph." The Examiner at page 8 of the Examiner's Action concludes that 40 mph would be obvious, then why not 25 mph since the conclusion is that the "internal combustion engine would drive the vehicle more frequently, thus reducing overall drain on the battery."

Claim 56 stands rejected under 35 U.S.C. 103 over Lynch et al.

Lynch is directed to a load leveling system for lead acid batteries. Lynch is not a system designed for and utilizing the advantages of a fast charge-discharge battery as the storage medium.

Claim 48 stands rejected under 35 U.SC. 103 over Lynch et al. in view of Ellers.

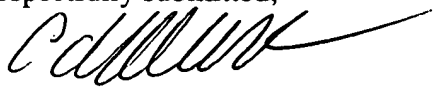
Parent claim 46 specifies a logic control circuit, a logic control circuit performs an arithmetic logic function, functioning during disengagement of the clutch, not seen in Lynch et al. Further, "a gear ratio of 1:1 may be maintained from engine 10 to differential 14 which assures maximum efficiency for the power train (see col. 3, lines 32-35)" is seen in Lynch et al. not logic control circuit of clutch as claim 46.

The Examiner's Answer at page 8 states Ellers discloses ..."the processor will enable driving of the generator 63 and the internal combustion engine 21." This is not the configuration according to claim 48 where "said first torque flow path provides torque to traction wheels of the hybrid vehicle" where the "first torque flow path including a clutch and transmission...(claim 46)." Further, if the processor enables driving of the generator 63 and internal combustion engine 21 in Ellers, how would a connection of the processor be made to the set of electromechanical relays comprising switches 42? The solution, it is believed, does not appear obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. 103.

Conclusions in response to Examiner's Answer

The systems of Lynch et al. ('795), Kenyon ('342), and Ellers ('025) are hybrids utilizing lead acid storage batteries and are directed to solutions and deficiencies inherent in such systems. In contrast, the present system utilizing fast charge-discharge batteries, certain cruise mode operating parameters, and logic control circuits providing extended range and therefore has greatly advanced the state of the art, and as defined with clarity in the claims is believed allowable and accordingly such notice is respectfully solicited.

Respectfully submitted,



Conrad O. Gardner
Registration No.: 22,462
Telephone No.: (206) 579-8077
Fax: (206) 269-0137

1502 N. 97th Street
Seattle, WA 98103